

WHAT IS CLAIMED:

1. A casting article, the article comprised of:
a water-curable Plaster of Paris (PP) article having a first side and a second side and having a substrate and PP material; and
5 a polyisocyanate material being applied to at least one of the first and second sides of the water-curable PP to obtain a water-curable hybrid plaster-polyisocyanate (HPP) casting article.
2. The casting article of claim 1 wherein the water-curable HPP casting article is cured.
- 10 3. The casting article of claim 1 wherein the first side of the water-curable PP article is smoother than the second side and the polyisocyanate material is applied to the first side.
4. The casting article of claim 1 wherein the water-curable PP article is a water-curable PP casting tape or a water-curable PP splint and the
15 polyisocyanate material is a polyisocyanate tape or a polyisocyanate resin.
5. The casting article of claim 4 wherein the substrate for the PP article is selected from the group consisting of cotton, glass fiber, polymeric knit, woven material and non-woven material.
6. The casting article of claim 1 wherein the weight ratio of the
20 polyisocyanate material and the water-curable PP article is in the range of about 1:99 to about 99:1.
7. The casting article of claim 1 wherein the polyisocyanate material is selected from the group consisting of aromatic isocyanates, aliphatic isocyanates, cycloaliphatic isocyanates, isocyanate-based adducts, isocyanate-based
25 derivatives, NCO-prepolymers, NCO-oligomers and NCO-quasi prepolymers.

8. The casting article of claim 7 wherein the polyisocyanate material has an isocyanate to active hydrogen equivalent weight ratio of greater than about 1.

5 9. The casting article of claim 2 wherein the polyisocyanate material is cured without a catalyst that promotes the reaction of the polyisocyanate material and water.

10 10. The casting article of claim 2 wherein the polyisocyanate material is cured with at least one catalyst promoting the reaction of the polyisocyanate material and water.

11. The casting article of claim 10 wherein the PP material includes the baked product of a PP paste and the at least one catalyst is added to the PP paste.

12. The casting article of claim 11 wherein the at least one catalyst does not significantly interfere with the curing of the water-curable PP article.

15 13. The casting article of claim 1 wherein the water-curable PP article includes at least one hardening agent and the polyisocyanate material includes at least one antifoaming agent and at least one stabilizer.

14. A casting assembly, the assembly comprised of:
a water-curable Plaster of Paris (PP) tape having a first side and a
20 second side and having a substrate and PP material; and
a polyisocyanate tape having a substrate and a polyisocyanate resin,
whereby the water-curable PP tape and the polyisocyanate tape can
be contacted to obtain a water-curable hybrid plaster-polyisocyanate (HPP) casting
article.

25 15. The casting assembly of claim 14 wherein the water-curable HPP casting article is cured.

16. The casting assembly of claim 14 further comprising a pouch for at least partially containing the water-curable PP tape and the polyisocyanate tape.

5 17. The casting assembly of claim 16 further comprising a foil material for at least partially separating the water-curable PP tape and the polyisocyanate tape in the pouch.

18. The casting assembly of claim 14 wherein the PP and polyisocyanate tape are dry packaged to minimize exposure to water and/or moisture.

10 19. The casting assembly of claim 14 wherein the water-curable PP tape and/or the polyisocyanate tape are commercially available and/or are specially designed.

15 20. The casting assembly of claim 14 wherein the substrate for the water-curable PP tape is selected from the group consisting of cotton, glass fiber, polymeric knit, woven material and non-woven material.

21. The casting assembly of claim 14 wherein the substrate for the polyisocyanate tape is selected from the group consisting of cotton, glass fiber, polymeric knit, woven material and non-woven material.

20 22. The casting assembly of claim 14 wherein the weight ratio of the polyisocyanate tape and the water-curable PP tape is in the range of about 1:99 to about 99:1.

25 23. The casting assembly of claim 14 wherein the polyisocyanate resin is selected from the group consisting of aromatic isocyanates, aliphatic isocyanates, cycloaliphatic isocyanates, isocyanate-based adducts, isocyanate-based derivatives, NCO-prepolymers, NCO-oligomers and NCO-quasi prepolymers.

24. The casting assembly of claim 23 wherein the polyisocyanate tape has an isocyanate to active hydrogen equivalent weight ratio of greater than about 1.

5 25. The casting assembly of claim 15 wherein the polyisocyanate tape is cured without a catalyst that promotes the reaction of the polyisocyanate tape and water.

26. The casting assembly of claim 15 wherein the polyisocyanate tape is cured with at least one catalyst for promoting the reaction of the polyisocyanate tape and water.

10 27. The casting assembly of claim 14 wherein the PP tape includes the baked-product of a PP paste and the at least one catalyst is added to the PP paste.

28. The casting assembly of claim 26 wherein the at least one catalyst does not significantly interfere with the curing of the water-curable PP tape.

15 29. The casting assembly of claim 14 wherein the water-curable PP tape includes at least one hardening agent and the polyisocyanate material includes at least one antifoaming agent and at least one stabilizer.

30. A method for preparing a cured hybrid plaster-polyisocyanate (HPP) casting article, the method comprised of:

20 providing a water-curable Plaster of Paris (PP) material having a first side and a second side and being comprised of a substrate and a PP material and a polyisocyanate material;

applying the polyisocyanate material to at least one of the first and second sides of the water-curable PP article to obtain a water-curable hybrid plaster-polyisocyanate (HPP) casting article; and

25 curing the water-curable hybrid plaster-polyisocyanate (HPP) casting article to obtain a cured HPP casting article.

31. The method of claim 30 wherein the applying step is comprised of spraying or coating the polyisocyanate material onto the water-curable PP article.

5 32. The method of claim 30 further comprising providing a PP article and baking the PP material to obtain the water-curable PP article.

33. The method of claim 32 further comprising adding at least one catalyst for promoting the reaction of isocyanates with water to the PP article prior to the baking step.

10 34. The method of claim 30 further comprising adding at least one catalyst for promoting reaction of isocyanates with water to the polyisocyanate material.

35. The method of claim 30 wherein the water-curable PP article is comprised of a water-curable PP tape and the polyisocyanate material is comprised of a polyisocyanate tape.

15 36. The method of claim 35 wherein the applying step is comprised of laminating the polyisocyanate tape onto the water-curable PP tape.

20 37. The method of claim 30 wherein the water-curable PP material is comprised of at least a first and second PP layer and the polyisocyanate material is comprised of at least a first and second polyisocyanate layer and further comprising prior to the curing step, applying the first polyisocyanate layer to the first PP layer, applying the second PP layer to the first polyisocyanate layer, and applying the second polyisocyanate layer to the second PP layer.